(11) (A) No. 1021139

(45) ISSUED 771122

(52) CLASS 26-169
C.R. CL.

(19) (CA) # CANADIAN PATENT

(54) METHOD OF MANUFACTURING STOP MEMBERS ON SLIDING CLASP FASTENERS

(70) Straszewski, Klaus R., Germany (Federal Republic of)

Granted to Opti Patent-, Forschungs- und Fabrikations-AG, Germany (Federal Republic of)

(21) APPLICATION No. 206,102
(22) FILED 740801

(30) PRIORITY DATE Germany (Federal Republic of) (P 23 39 887.0) 730807

No. OF CLAIMS 8

The invention relates to a method of making stop members on sliding clasp fasteners having rows of fastener members of a thermoplastic ~~sectional~~ strand (preferably a plastics monofilament), which have closure member portions projecting over the edges of textile supporting tapes and have coupling heads, a thermoplastic backing being applied to the rows of fastener members in the area where the stop members are to be located, the stop members being formed from the backing together with part of the rows of fastener members, by the application of pressure and heat. As a rule, for sliding clasp fasteners of this type the plastics ~~sectional~~ strand used is an expanded plastics monofilament. The rows of fastener members can be secured to the supporting tapes by sewing, weaving or knitting or in any other suitable manner using yarns for attachment. The supporting tape edges are woven, knitted or folded edges for covered sliding clasp fasteners, the fastener members in the uncoupled position always projecting beyond the supporting tape edges by at least the "engagement depth" (the supporting tape edges as a rule are in abutting position when the fastener is closed). The term stop members means stop members at both ends of the sliding clasp fastener - i.e., the constructional elements of a sliding clasp fastener as described which limit movement of the slider on opening or closing of the sliding clasp fastener. However, for the purposes of this invention "stop members" also means the connection and insertion members of separating devices for separating sliding clasp fasteners.

In known methods of making the aforementioned fasteners the plastics backing is a strip of plastics foil which is applied to the width of the rows of fastener members, plus the full or partial width of the supporting tapes, and also covers the attaching threads, in the area where the stop members are to be formed. The stop members are formed by welding the strip of plastic foil to the closure members. This has been found to be a satisfactory method and it also ensures that those portions of the supporting tape projecting beyond the stop members are projected against raveling of the woven or knitted fabric at the cut edges. However, the projecting portions of the supporting tape lose flexibility to some extent due to the adhering plastics foil, and this may be a disadvantage depending on the purpose for which the sliding clasp fastener is to be used. Sliding clasp fasteners are also known in which plastics backing

in the form of strips of plastics foil is applied only to the rows of fastener members including the attaching threads (and covering only a small part, if any, of the supporting tapes), the plastics backing and the closure members being welded together to form stop members. However edges are formed on the stop members in the lengthwise direction, on which the threads of the supporting tapes and often also the attaching threads integrated in the stop members are frequently broken. The same is true even if only the rows of fastener members and attaching threads are welded to the plastics backing to form stop members. The disadvantages are not as severe as with the method first described. However, knitted supporting tapes are available in which there is no danger of the cut edges raveling or in which raveling can be counteracted in some manner other than by adhesion of plastics foil. In this respect the steps taken in the first-mentioned prior art method can be simplified.

The present invention provides a method of forming the stop members without using plastics backing strips to cover the whole width of the rows of fastener members plus, if required, parts of the supporting tapes. The invention obviates the risk of breakage of the supporting band threads or attaching threads in the area of the stop members.

In the type of method indicated, according to the present invention plastics strand portions are merely laid on the parts of the fastener members projecting beyond the supporting tape edges, such strand portions being substantially of the width of the projecting parts of the fastener members, and the strand portions are combined with the projecting parts of the fastener members to form stop members of substantially the width of the projecting parts of the fastener members only. In the embodiment of the method for making end stop members, in which conventionally a plastics backing is laid on the rows of coupled fastener members, according to the present invention plastics strand portions are laid on the projecting parts of the closure members in the area of engagement of the coupled rows of fastener members and pressed into such parts. In the embodiment for manufacture of stop members at the separating end of the sliding clasp fastener in which conventionally a plastics backing is laid on uncoupled rows of closure members, according to the present

invention plastics strand portions are laid on the closure member parts of the separated rows of closure members and pressed into those parts.

According to the invention the projecting parts of the fastener members can be joined with the applied strand portions in various ways. In a preferred embodiment of the invention, which is readily performed, the projecting parts of the fastener members and the plastics strand portions are joined with one another by the use of ultrasonic energy. The connection can vary in actual construction but the operations can be performed using ultrasonic energy. For instance, the projecting parts of the fastener members can be embedded in the plastics of the sectional strand portions. Alternatively, however, the projecting parts of the fastener members can be homogeneously connected to the plastics strand portions, which can be carried out by means of for example welding. During such procedure the projecting parts of the fastener members are usually deformed to some extent, but the closure members and parts thereof are still distinct in the stop members. However, the process can be carried further so that the fastener members and strand portions are completely melted together to form homogeneous stop members. The plastics strand portions may be of round or other cross-section. As a rule they are produced by continuous extrusion. Connection of the plastics strand portions to the projecting parts of the fastener members can readily be made if the operations are performed using expanded plastics monofilament as the strand portions also, and preferably with portions of that plastics monofilament from which the rows of fastener members are made.

The resulting advantages are that the method according to the invention obviates the need for strips of plastics foil applied to the rows of fastener members and the supporting tapes. There is therefore no adverse effect on the flexibility of the corresponding supporting tape portions. Nor, however, is there any risk that attaching threads or supporting tape threads may break in the area of the stop members simply because in the method according to the invention there are no attaching threads or tape threads integrated with the stop members. In addition, the method according to the invention can be very simply performed, particularly if pressure and heat are produced by means of ultrasonic energy. The method according to the invention is very

important for the manufacture of stop members in sliding clasp fasteners having knitted or woven supporting tapes which, due to their weave or some pretreatment, do not readily ravel at the cut edges.

One emobodiment of the invention will now be described in greater detail with reference to the drawings, wherein:

Fig. 1 is a cross-section on an enlarged scale through a sliding clasp fastener on which stop member are to be made according to the invention;

Fig. 2 shows the cross-section of Fig. 1 after the production of a stop member;

Fig. 3 is a plan view, substantially to actual size of a sliding clasp fastener which has been provided with stop members by the method according to the invention;

Fig. 4 is an enlarged portion of the fastener of Fig. 3, showing a different slider position and with the slider broken off, and

Fig. 5 is a view taken in the direction indicated by the arrow A in Fig. 4.

Fig. 1 shows in solid lines one half of a sliding clasp fastener having a fastener member 1 of a row 2 (Fig. 3) of fastener members, made of a thermoplastic ~~sectional~~ strand 3 in the form of a plastics monofilament, having parts 7 projecting beyond edge 4 of a supporting tape 5 made of textile material, and bearing a coupling head 6. The embodiment illustrated shows a knitted supporting tape 5 with knitted edge 4. The row 2 of fastener members is attached to the supporting tape 5 by a sewn seam 8. The section shown in Fig. 1 is in the area where a stop member 9 is to be formed (cf. Fig.3). It can be seen that a plastics ~~sectional~~ strand portion 10 is merely applied to parts 7 of the fastener members which project beyond the supporting tape edge 4. The ~~sectional~~ strand portion has a width corresponding substantially to the width of the projecting parts 7. Its length corresponds to the length of the stop member 9 to be formed.

Fig. 2 shows the corresponding sectional view after a stop member 9 has been produced. It can be seen that the ~~sectional~~ strand portion 10 has been combined with the projecting parts 7 of the fastener members to form stop member 9 having substantially only the width of the projecting parts 7. Fig.1

A

shows the ~~sectional~~ strand portion 10 in section. Its length is shown by comparison of Figs. 3 and 5.

Figs. 1 and 2 show in solid lines the production of stop member 9 at the separating end of the sliding clasp fastener. However, stop members can also be made at the non-separating end of the sliding clasp fastener in a corresponding manner (cf. bottom of Fig. 3). Fig. 1 shows on the left-hand side in broken lines a closure member 1 of the second half of a sliding clasp fastener to be given stop members 9. It can clearly be seen that the method is exactly the same as previously described. In one case the plastics ~~sectional~~ strand portions 10 are applied in the zone of engagement of coupled rows 2 of fastener members and pressed into the projecting parts 7 of the fastener members, while in the other case the strands are applied to uncoupled fastener members. Fig. 1 also indicates apparatus which may be used to join the plastics ~~section~~ strand portions with the projecting parts of the fastener members. Shown are sonotrode S and anvil A of an ultrasonic welding device.

THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. A method of making stop members on sliding clasp fasteners having rows of fastener members of thermoplastic material which have closure member parts projecting beyond supporting tape longitudinal edges,which method comprises applying strand portions along the parts of the fastener members projecting beyond the edges of the supporting tapes for distances corresponding to desired stop member length, the strand portions being of substantially the same width as the projecting parts of the fastener members, and fusing the strand portions with the projecting parts of the fastener members to form stop members of substantially the same width as the projecting parts of the fastener members.

2. The method of claim 1 wherein a plastics strand portion is applied to projecting parts of coupled closure members and joined therewith to form an end stop member at non-separating ends of the fasteners.

3. The method of claim 1 wherein plastics strand portions are applied to the projecting parts of separated closure members and joined therewith to form stop members at separating ends of the fasteners.

4. The method of claim 1 wherein the projecting parts of the fastener members and the applied plastics strand portions are fused by the use of ultrasonic energy.

5. The method of any of claims 1 to 3 wherein the projecting parts of the fastener members are embedded by fusion in the plastics of the strand portions.

A

6. The method of any of claim to to 3, wherein the projecting parts of the fastener members are completely fused with the plastics of the plastics strand portions.

7. The method of any of claims 1 to 3 wherein the fastener members and the strand portions are of the same plastics material and the projecting parts of the fastener members and the strand portions are completely fused to form unitary stop members.

8. The method of any of claims 1 to 3 wherein the plastics strand portions are expanded monofilaments.

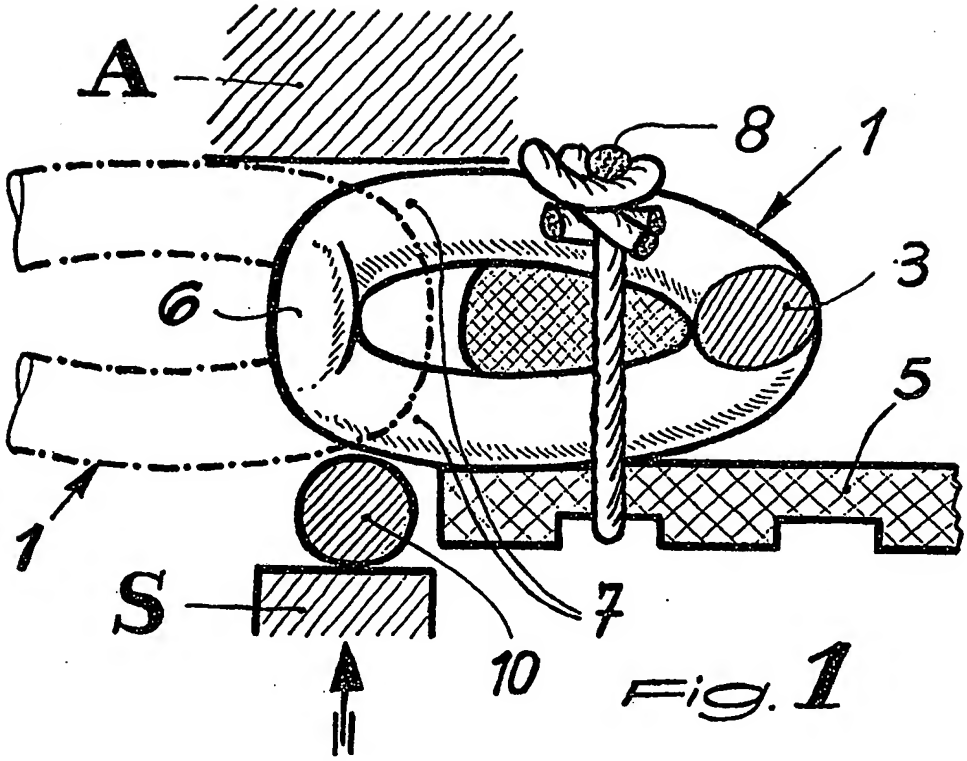

Fig. 1

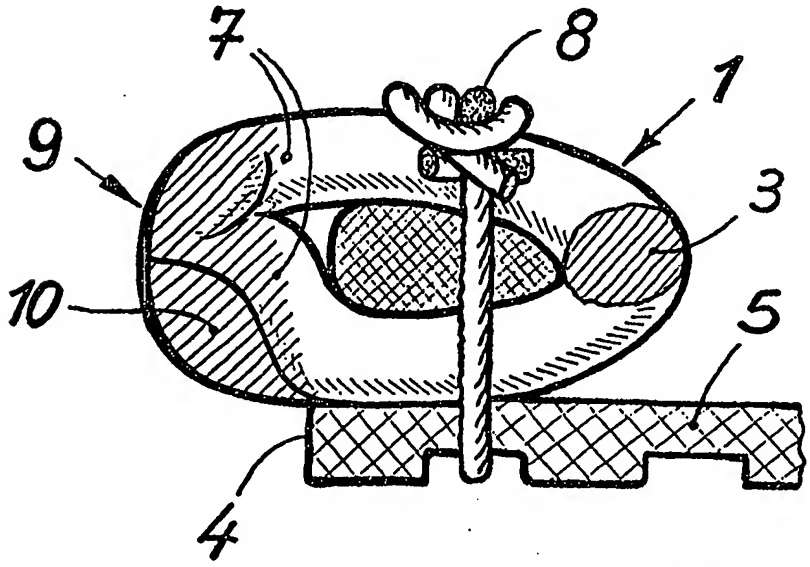

Fig. 2

Scott & Aylen

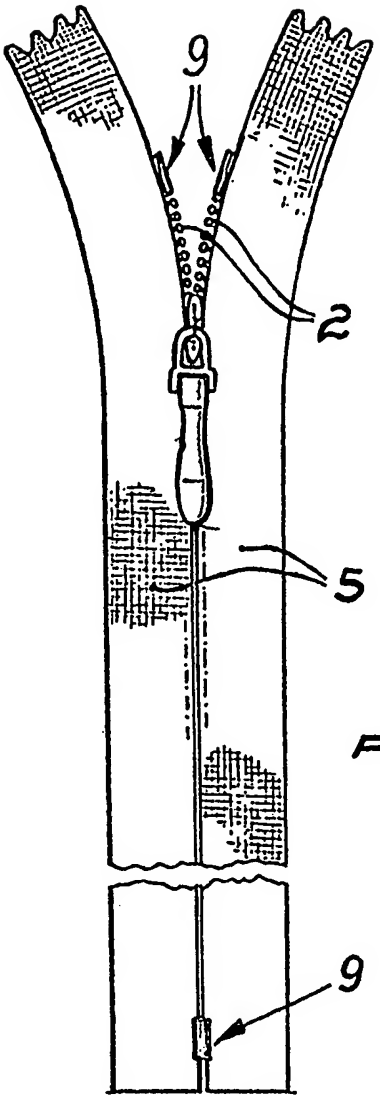

Fig. 3

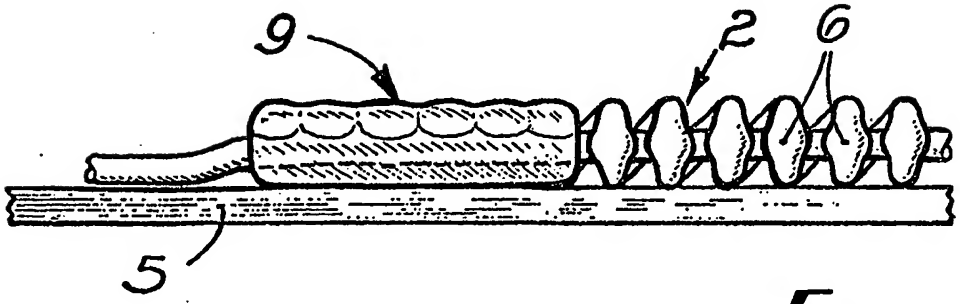

Fig. 5

Scott & Aylon

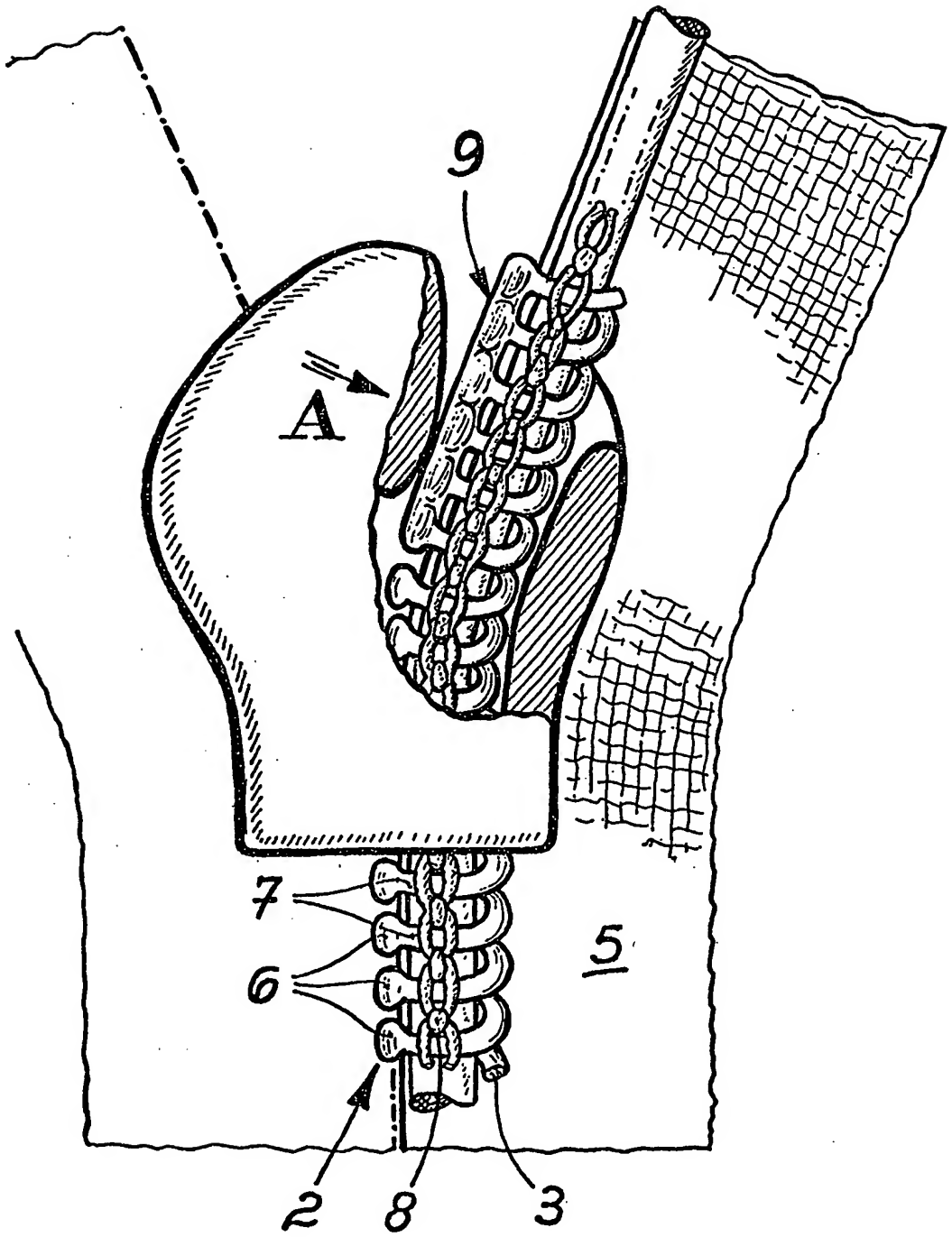

Fig. 4

Scott & Aylen

ABSTRACT OF THE DISCLOSURE

An improved method is disclosed for the production of stop members at the ends of rows of fastener members of sliding clasp fasteners, the improvement being the use of thermoplastic ~~sectional~~ strands applied along the desired length and only behind the portions of the fastener members which extend over the supporting tapes, and joining thereof by for example welding so that the stop members so formed are of substantially only the same width as the projecting parts of the fastener members. Stop members can be formed for separating or non-separating ends of the sliding clasp fastener by applying the backing strands to uncoupled or coupled rows of fastener elements respectively.